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Paper Report

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NC DENR

Division of Waste Management - Solid Waste

Environmental Monitoring Reporting Form

Notice: This form and any information attached to it are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

Instructions:

- Prepare one form for each individually monitored unit.
- Please type or print legibly.
- Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.).
- Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
- Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i)).
- Send the original signed and sealed form, any tables, and Electronic Data Deliverable to: Compliance Unit, NCDENR-DWM, Solid Waste Section, 1646 Mail Service Center, Raleigh, NC 27699-1646.

Solid Waste Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

S&ME, Inc. (Consultant)

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: William M. Miller, P.E.

Phone: 828-687-9080

E-mail: wmiller@smeinc.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Duke Energy McGuire Nuclear Station Landfill #1	13339 Hagers Ferry Road Huntersville, NC 28078	60-04	.0500	July 20, 2009

Environmental Status: (Check all that apply)

- Initial/Background Monitoring Detection Monitoring Assessment Monitoring Corrective Action

Type of data submitted: (Check all that apply)

- Groundwater monitoring data from monitoring wells Methane gas monitoring data
 Groundwater monitoring data from private water supply wells Corrective action data (specify) _____
 Leachate monitoring data
 Surface water monitoring data Other(specify) _____

Notification attached?

- No. No groundwater or surface water standards were exceeded.
 Yes, a notification of values exceeding a groundwater or surface water standard is attached. It includes a list of groundwater and surface water monitoring points, dates, analytical values, NC 2L groundwater standard, NC 2B surface water standard or NC Solid Waste GWPS and preliminary analysis of the cause and significance of any concentration.
 Yes, a notification of values exceeding an explosive methane gas limit is attached. It includes the methane monitoring points, dates, sample values and explosive methane gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

William M. Miller, P.E.

Senior Project Engineer

828-687-9080

Facility Representative Name (Print)

Title

(Area Code) Telephone Number

William M. Miller

October 19, 2009

Affix NC Licensed/ Professional Geologist Seal

Signature

Date

44 Buck Shoals Rd, Suite C-3, Arden, NC 28704

Facility Representative Address

F-0176

NC PE Firm License Number (if applicable effective May 1, 2009)

Revised 6/2009



**SEMI-ANNUAL
GROUNDWATER MONITORING REPORT
JULY 2009 SAMPLING EVENT
DUKE ENERGY MCGUIRE NUCLEAR STATION
LANDFILL #1 (PERMIT #60-04)
HUNTERVILLE, NORTH CAROLINA
S&ME Project No. 1411-09-047**

Prepared For:



Prepared By:



S&ME, Inc.
44 Buck Shoals Road Suite C-3
Arden, North Carolina 28704

October 19, 2009



October 19, 2009

Ms. Jackie Drummond
North Carolina Department of Environment and Natural Resources
Division of Waste Management
Solid Waste Section
1646 Mail Service Center
Raleigh, North Carolina 27699-1646

**Reference: Semi-Annual Groundwater Monitoring Report
July 2009 Sampling Event
Duke Energy Carolinas – McGuire Nuclear Station
Landfill #1 (Permit # 60-04)
Huntersville, North Carolina
S&ME Project 1411-09-047**

Dear Ms. Drummond:

This report presents the semi-annual groundwater monitoring for the McGuire Nuclear Station Landfill #1 (Permit #60-04). The landfill is closed and is located at Duke Energy's McGuire Nuclear Station near Huntersville, North Carolina, in Mecklenburg County. Groundwater sampling for the landfill was performed on July 20, 2009. S&ME is submitting this report on the behalf of Duke Energy.

The Groundwater Monitoring Report for the sampling event includes a summary of the groundwater monitoring activities, the analytical results, a figure showing groundwater contours at the site, and preliminary evaluation of values in excess of the NCAC 2L groundwater standards. Also attached is the Environmental Monitoring Reporting Form. An EXCEL file containing the laboratory results in the Electronic Data Deliverable format will be sent to you by e-mail.

If you have questions or require additional information, please contact me at 828-687-9080.

Sincerely,

S&ME, Inc.


William M. Miller, P.E.
Senior Project Engineer



 JFG
Larry Armstrong, P.E.
Senior Engineer

North Carolina Professional Engineering Firm License No. F-0176

S:\2009 PROJECTS\1411\ENVIRONMENTAL PROJECTS\11 09 047 Duke Energy Landfills - GW Reports\MNS LF #1\Aug 2009 Sampling\Final Report\MNS LF #1 -October 2009 Report Final .doc

cc: Mr. Andy Tinsley, Duke Energy
Mr. Joe Hack, Mecklenburg County Solid Waste Department
Mr. Dale Dusenberry, NCDENR Radiation Protection Section

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Chain of Custody Form

1.0 BACKGROUND

The McGuire Nuclear Station Landfill #1 (Permit #60-04) is located at the Duke Energy (Duke) McGuire Nuclear Station, near Huntersville, North Carolina, in Mecklenburg County. The landfill is closed and no longer accepts waste. The landfill and nearby area is portrayed on Figure 1. The approximate limit of waste is also shown on Figure 1.

The landfill is located south of NC Highway 73, east of the Catawba River, and to the west of Cashion Road. Cashion Road runs along a topographic divide, with topography sloping away from Cashion Road to the northwest and to the southeast. Thus, surface water to the northwest of Cashion Road drains towards the Catawba River. There are surface water drainage features to the northeast and southwest of the landfill that eventually merge to the northwest, toward a perennial, unnamed stream.

The monitoring system at the landfill consists of twelve (12) groundwater monitoring wells and one surface water sample location, as listed below.

Monitoring Wells: MW-1
MW-1D
MW-2
MW-2D
MW-3
MW-3D
MW-4
MW-4D
MW-11
MW-11D
MW-12
MW-12D

**Surface Water
Sample Location** SW-1

The monitoring wells and the surface water sample location are shown on Figure 1. The wells are installed as well pairs with one shallow well and one deeper well adjacent to each other. The well with the “D” designation is the deepest of the pair of wells.

2.0 SCOPE OF WORK

To complete the scope of work, S&ME completed the following tasks:

- Received information provided by Duke on field sampling and measurement of groundwater elevations (performed by Duke) for monitoring wells MW-1, MW-1D, MW-2, MW-2D, MW-3, MW-3D, MW-4, MW-4D, MW-11, MW-11D, MW-12, and MW-12D. The samples were collected on July 20, 2009.
- Received information provided by Duke of field sampling performed at surface water sample location SW-1. The sample was collected on July 20, 2009
- Reviewed the laboratory analytical results for the samples described above. These laboratory analyses were performed by Pace Analytical. The results were provided in both in paper format and in an EXCEL file. The EXCEL file was manipulated to conform to the format requirements of the NCDENR Electronic Data Deliverable template.
- Developed a groundwater flow contour map using map data and groundwater elevation data supplied by Duke.
- Provided a review to determine if analytical results meet or exceed NC 2L groundwater standards.
- Provided a review to determine if analytical results meet or exceed the Solid Waste Section Limits (SWSLs)
- Prepared and submitted this Groundwater Monitoring Report to Duke and the NCDENR.

3.0 RESULTS

3.1 Site Groundwater Flow

Groundwater flow contours for the site are shown on Figure 2. These contours were developed using the groundwater elevations measured on July 20, 2009.

Groundwater flow beneath the landfill is generally from the south-east end of the landfill towards the surface water drainage features previously described. In more detail, the groundwater flow at the landfill would be described as follows:

- Groundwater flow along the northeast side of the landfill, in the region of wells MW-2/MW-2D, is to the northeast toward the surface water drainage feature located along the northeast side of the landfill.
- Groundwater flow from the northwest end of the landfill in the region of wells MW-3/MW-3D and MW-4/MW-4D, appears to be to the northwest, toward lower topography and the surface water feature located northwest of the landfill.
- Groundwater flow from the west side of the landfill, in the region between wells MW-4/MW-4D and MW-11/MW-11D, appears to be to the west towards the surface water drainage feature located along the west of the landfill.

- Groundwater flow from the southwest side of the landfill, in the region of wells MW-12/MW-12D, is to the southwest toward the lower topography and surface water drainage feature located southwest of the landfill.

3.2 Analytical Results

As noted, Duke collected and chemically analyzed water samples from the twelve (12) groundwater monitoring wells and one (1) surface water sample location comprising the landfill monitoring network. A summary of the field data is presented in Table 1.

Samples were analyzed for the compounds listed on the Chain of Custody form (attached). The results of the laboratory analyses are summarized in Table 2.¹ Results from the groundwater monitoring well samples and surface water sample were below the corresponding NCAC 2L groundwater quality standards with the exceptions noted below:

- pH – pH values below 6.5 were measured in groundwater samples from wells MW-1, MW-1D, MW-3, MW-4, MW-4D, MW-11, MW-11D, MW-12, and MW-12D. The measured pH values below 6.5 ranged from 4.7 (Standard Units) in MW-11 to 6.4 in MW-12D.

The pH values measured in these wells are consistent with historical measurements at the site.

- Trichloroethene – Trichloroethene was measured in the groundwater sample from well MW-4. The concentration in this well was measured at 1.6 ug/L, which is in excess of the NCAC 2L groundwater standard of 0.7 ug/L. The values for this compound have varied as shown in the following table.

Sample Date	Trichloroethene Concentration (ug/L)
Jan 2007	1.5
July 2007	1.1
Jan 2008	0.89
July 2008	0.88
Jan 2009	1.5
July 2009	1.6

This well is located approximately 15 from the waste boundary and approximately 110 feet inside of the NCAC 2L Review Boundary. In 2005 and 2006, wells MW-4D and MW-3 had detections of trichloroethene, however the concentrations at these wells dropped in 2007 to levels below the NCAC 2L standard. Duke should continue to monitor the results for this compound at this location.

¹ Analytical results were provided by Duke Energy. Reference Pace Lab Report Project 9248992, dated August 6, 2009.

The analytical results show concentrations that meet or exceed the SWSL's as follows:

Barium	MW-1
Chromium	MW-2D
Methylene Chloride	All wells and SW-1.

Methylene Chloride was measured at 1.8 ug/L in the Trip Blank and at 2.4 ug/L in the Field Blank, indicating possible contamination as the source of this compound

Table 3 presents the results of analysis for radiological constituents. These results were provided by Duke Energy². A copy of this report along with the report of the radiological laboratory analysis is submitted to the NCDENR Radiation Protection Section.

² Duke Lab Report 09-JUN-0014, dated 8/12/2009.

TABLE 1 - FIELD DATA
DUKE ENERGY MCGUIRE NUCLEAR STATION
SOLID WASTE LANDFILL #1 - PERMIT NO. 60-04
GROUNDWATER MONITORING REPORT
S&ME PROJECT 1411-09-047

DATE	WELL NO.	WELL DEPTH		TOWATERDEPTH TO		ODOR	Purge Method	AVG * PMP RATE (ml/min)	WELL VOL (gal)	EVAC VOL (gal)	EVAC (yes/no)	TEMP (deg C)	SPECIFIC				
		DEPTH (feet)	WATER (feet)	ELEV. (feet)	PRODUCT (feet)								CONDUCTANCE (umho/cm)	pH (units)	TURBIDITY (NTU)	ORP (mV-NHE)	DO (mg/l)
7/20/2009	MW-1	69.00	27.31	702.98	N/A	NA	CP	N/A	6.80	21.00	NO	16.9	82	6.1	6.3	N/A	N/A
7/20/2009	MW-1D	88.60	28.22	702.45	N/A	NA	CP	N/A	9.85	30.00	NO	16.6	69	6.2	8.8	N/A	N/A
7/20/2009	MW-2A	78.00	52.32	687.93	N/A	NA	CP	N/A	4.19	17.00	NO	17.6	56	6.7	1.7	N/A	N/A
7/20/2009	MW-2D	110.10	53.51	687.28	N/A	NA	CP	N/A	9.23	27.75	NO	17.2	61	7.0	3.2	N/A	N/A
7/20/2009	MW-3	71.00	57.34	671.70	N/A	NA	CP	N/A	2.23	6.75	NO	15.9	73	6.3	3.1	N/A	N/A
7/20/2009	MW-3D	88.88	56.69	671.74	N/A	NA	CP	N/A	5.25	15.75	NO	17.0	98	6.6	1.4	N/A	N/A
7/20/2009	MW-4	73.95	64.83	676.41	N/A	NA	CP	N/A	1.49	2.00	YES	16.9	147	5.6	3.1	N/A	N/A
7/20/2009	MW-4D	101.48	65.60	675.09	N/A	NA	CP	N/A	5.85	18.00	NO	16.3	105	6.3	1.3	N/A	N/A
7/20/2009	MW-11	38.54	29.06	693.56	N/A	NA	CP	N/A	1.55	2.00	YES	15.5	14	4.7	14.5	N/A	N/A
7/20/2009	MW-11D	101.80	30.18	692.98	N/A	NA	CP	N/A	11.68	28.00	NO	15.7	32	5.7	15.4	N/A	N/A
7/20/2009	MW-12	29.59	24.66	700.17	N/A	NA	CP	N/A	0.80	1.25	YES	15.3	22	5.3	124.0	N/A	N/A
7/20/2009	MW-12D	68.56	25.89	698.91	N/A	NA	CP	N/A	6.96	21.00	NO	15.4	90	6.4	14.2	N/A	N/A
7/20/2009	SW-1	N/A	N/A	N/A	N/A	NA	CP	N/A	N/A	N/A	N/A	20.5	168	6.6	153.0	N/A	N/A

Purge Methods

LF = Low Flow

CP = Coventional Purge (3 to 5 well vol)

BP = No Purge (HydraSleeve)

|Field Sampling Performed by Duke Energy

**TABLE 2 - FIELD AND GEOCHEMISTRY DATA
DUKE ENERGY MCGUIRE NUCLEAR STATION
SOLID WASTE LANDFILL #1 - PERMIT NO. 60-04
GROUNDWATER MONITORING REPORT
S&ME PROJECT 1411-09-047**

Facility: McGuire Nuclear Station, Solid Waste Landfill No.1 - Permit # 60-04
Sample Date: July 20, 2009 (Field and Geochemistry Data)

Certificate Codes:
Duke Power Field #5193
Pace Lab #12
Page 1 of 2

Field Sampling Performed by Duke Energy

Monitoring Well Identification

Parameter	SW ID	Units	Certificate Codes	6004-MW-1	6004-MW-1D	6004-MW-2A	6004-MW-2D	6004-MW-3	6004-MW-3D	SWSL	15A NCAC 2L*
Field pH	320	Std. Units	5193	6.1	6.2	6.7	7.0	6.3	6.6		6.5-8.5
Field Spec. Conductance	323	umho/cm	5193	82	69	56	61	73	98		
Temperature	325	C	5193	16.9	16.6	17.6	17.2	15.9	17.0		
Top Casing	328	feet		730.29	730.67	740.25	740.79	729.04	728.43		
Depth to Water	318	feet		27.31	28.22	52.32	53.51	57.34	56.69		
Water Elevation	319	feet		702.98	702.45	687.93	687.28	671.70	671.74		
Well Depth	411	feet		69.0	88.6	78.00	110.10	71.00	88.88		
Arsenic	14	ug/L	12	ND U	ND U	ND U	ND U	ND U	ND U	10	50
Barium	15	ug/L	12	144	51.0 J	12.2 J	12.5 J	16.8 J	31.6 J	100	2000
Cadmium	34	ug/L	12	ND U	ND U	ND U	ND U	ND U	ND U	1.0	1.75
Chloride	301	ug/L	12	ND U	ND U	ND U	ND U	ND U	ND U	NE	NE
Chromium	51	ug/L	12	ND U	ND U	0.43 J	22.1	ND U	0.40 J	10	50
Lead	131	ug/L	12	ND U	ND U	ND U	ND U	ND U	ND U	10	15
Mercury	132	ug/L	12	ND U	0.12 J	ND U	0.10 J	0.10 J	0.12 J	0.2	1.05
Selenium	183	ug/L	12	ND U	ND U	ND U	ND U	ND U	ND U	10	50
Silver	184	ug/L	12	ND U	0.75 J	0.26 J	0.35 J	0.58 J	ND U	10	17.5
Sulfate	315	ug/L	12	ND U	ND U	ND U	ND U	ND U	ND U	250000	250000
VOC's ***		ug/L	12	***	***	***	***	***	***		
Dichlorodifluoromethane	74	ug/L	12	ND U	ND U	ND U	ND U	0.81 J	ND U	5	1400
Methylene Chloride	140	ug/L	12	1.4 U	1.4 U	1.6 U	1.7 U	2.0	1.4 U	1	4.6
Toluene	196	ug/L	12	ND U	ND U	ND U	0.56 J	ND U	ND U	1	1000
Trichlorofluoromethane	203	ug/L	12	ND U	ND U	ND U	ND U	0.50 J	0.44 J	1	2100

* Maximum Contaminant Level (MCL)

Notes:

15A NCAC 2L = 15A NCAC 2L .0200, Groundwater Quality Standards for Class GA groundwater

BOLD VALUES indicate a values that attain or exceed the 15A NCAC 2L MCL.

Values in gray cells indicate values that equal or exceed the SWSL.

ND = Not detected by Lab at or above adjusted detection limit.

J = Parameters are estimated values greater than Method Detection Limit (MDL) but less than the SWSL

U = Value below Laboratory Reporting Limit

NS = No Sample - Insufficient volume in well to collect samples.

*** All EPA method 8260 compounds not specifically listed were less than laboratory reporting limits

Analytical results provided by Duke Energy and are found in

Pace Lab Report 9248992, Dated August 6, 2009.

NC SWSL = North Carolina Solid Waste Section Limit

NE = Not established

**TABLE 2 - FIELD AND GEOCHEMISTRY DATA
DUKE ENERGY McGUIRE NUCLEAR STATION
SOLID WASTE LANDFILL #1 - PERMIT NO. 60-04
GROUNDWATER MONITORING REPORT
S&ME PROJECT 1411-09-047**

Facility: McGuire Nuclear Station, Solid Waste Landfill No.1 - Permit # 60-04
Sample Date: July 20, 2009 (Field and Geochemistry Data)

Certificate Codes:
Duke Power Field #5193
Pace Lab #12
Page 2 of 2

Field Sampling Performed by Duke Energy

Monitoring Well or Surface Water Sample Identification

Parameter	SW ID	Units	Certificate Codes	6004-MW-4	6004-MW-4D	6004-MW-11	6004-MW-11D	6004-MW-12	6004-MW-12D	6004-SW-1	SWSL	15A NCAC 2L*
Field pH	320	Std. Units	5193	5.6	6.3	4.7	5.7	5.3	6.4	6.6		6.5-8.5
Field Spec. Conductance	323	umho/cm	5193	147	105	14	32	22	90	168		
Temperature	325	C	5193	16.9	16.3	15.5	15.7	15.3	15.4	20.5		
Top Casing	328	feet		741.24	740.69	722.62	723.16	724.83	724.80	NA		
Depth to Water	318	feet		64.83	65.60	29.06	30.18	24.66	25.89	NA		
Water Elevation	319	feet		676.41	675.09	693.56	692.98	700.17	698.91	NA		
Well Depth	411	feet		73.95	101.48	38.54	101.80	29.59	68.56	NA		
Arsenic	14	ug/L	12	ND U	ND U	ND U	ND U	ND U	ND U	ND U	10	50
Barium	15	ug/L	12	63.6 J	15.3 J	6.1 J	14.6 J	19.4 J	10.9 J	52.0 J	100	2000
Cadmium	34	ug/L	12	ND U	ND U	ND U	ND U	ND U	ND U	ND U	1.0	1.75
Chloride	301	ug/L	12	ND U	ND U	ND U	ND U	ND U	ND U	ND U	NE	250000
Chromium	51	ug/L	12	ND U	ND U	ND U	ND U	ND U	ND U	ND U	10	50
Lead	131	ug/L	12	ND U	ND U	ND U	ND U	ND U	ND U	ND U	10	15
Mercury	132	ug/L	12	0.12 J	0.13 J	0.097 J	0.11 J	0.14 J	0.087 J	ND U	0.2	1.05
Silver	184	ug/L	12	0.16 J	ND U	ND U	ND U	ND U	0.25 J	ND U	10	17.5
Sulfate	315	ug/L	12	ND U	ND U	ND U	ND U	ND U	ND U	ND U	250000	250000
VOC's ***		ug/L	12	***	***	***	***	***	***	***		
Dichlorodifluoromethane	74	ug/L	12	ND U	0.42 J	ND U	ND U	ND U	ND U	ND U	5	1400
cis-1,2-Dichloroethene	78	ug/L	12	1.5	0.74 J	ND U	ND U	ND U	ND U	ND U	5	70
Methylene Chloride	140	ug/L	12	2.0	2.5	1.5	1.6	1.2	1.4	1.3	1	4.6
Toluene	196	ug/L	12	0.55 J	0.32 J	0.28 J	ND U	ND U	ND U	0.73 J	1	1000
Trichloroethene	201	ug/L	12	0.83 J	0.84 J	ND U	ND U	ND U	ND U	ND U	1	2.8
Tetrachloroethene	192	ug/L	12	1.6	ND U	ND U	ND U	ND U	ND U	ND U	1	0.7
o-Xylene	346	ug/L	12	ND U	0.27 J	ND U	ND U	ND U	ND U	ND U	5 (Note 1)	530 (Note 1)

* Maximum Contaminant Level (MCL)

Notes:

15A NCAC 2L = 15A NCAC 2L .0200, Groundwater Quality Standards for Class GA groundwater

BOLD VALUES indicate a values that attain or exceed the 15A NCAC 2L MCL.

Values in gray cells indicate values that equal or exceed the SWSL.

ND = Not detected by Lab at or above adjusted detection limit.

J = Parameters are estimated values greater than Method Detection Limit (MDL) but less than the SWSL

U = Value below Laboratory Reporting Limit

NS = No Sample - Insufficient volume in well to collect samples.

*** All EPA method 8260 compounds not specifically listed were less than laboratory reporting limits

Analytical results provided by Duke Energy and are found in

Pace Lab Report 9248992, Dated August 6, 2009.

NC SWSL = North Carolina Solid Waste Section Limit

NE = Not established

(Note 1) SWSL and 15NCAC 2L values are for total xylenes.

TABLE 3 - RADIOLOGICAL DATA
DUKE ENERGY McGUIRE NUCLEAR STATION
SOLID WASTE LANDFILL #1 - PERMIT NO. 60-04
GROUNDWATER MONITORING REPORT
S&ME PROJECT 1411-09-047

Facility: McGuire Nuclear Station, Solid Waste Landfill N0.1 - Permit # 60-04
Sample Date: July 20, 2009 (Radiological Data)

Certificate Codes:

Duke Power Lab #248
Page 1 of 1

Field Sampling Performed by Duke Energy

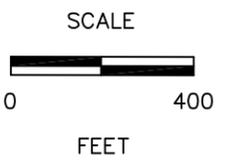
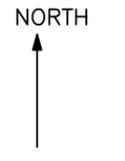
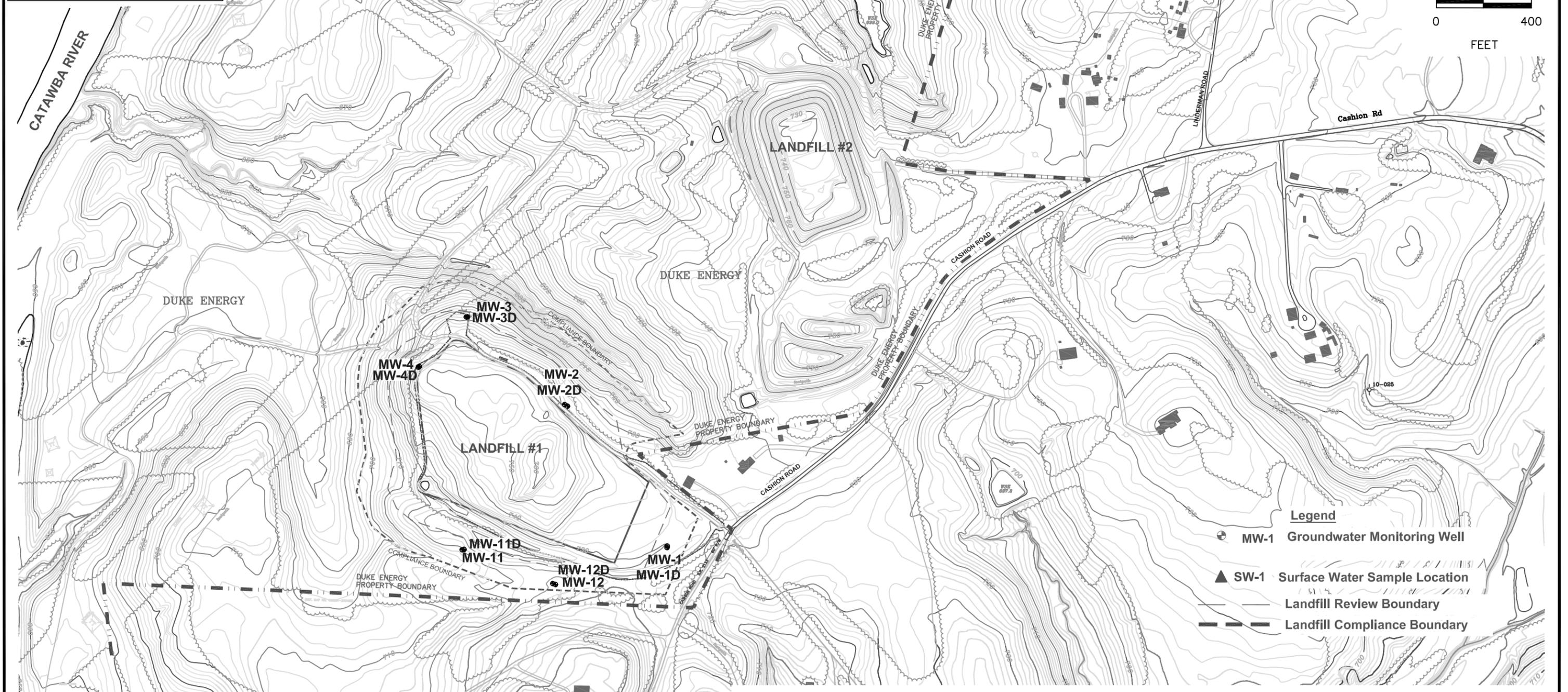
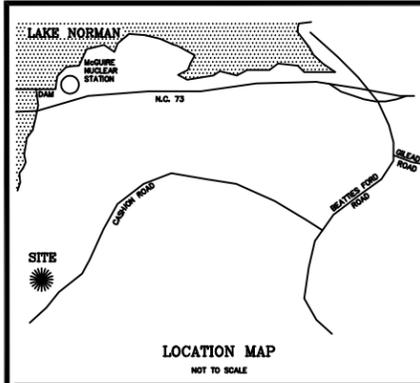
Monitoring Well Identification

Parameter	Units	Certificate Codes	6004-MW-1	6004-MW-1D	6004-MW-2A	6004-MW-2D	6004-MW-3	6004-MW-3D	6004-MW-4	6004-MW-4D	6004-MW-11	6004-MW-11D	6004-MW-12	6004-MW-12D	6004- SW-1
ALPHA	pCi/l	248	< -0.360	< -0.300	< -0.0960	< -0.390	< -0.380	< .00480	< 0.110	< -0.430	< 0.0390	< -0.460	< 0.250	< -0.160	< 0.180
BALA140	pCi/l	248	< 5.569	< 4.669	< 4.022	< 3.399	< 4.863	< 4.509	< 4.720	< 6.490	< 5.330	< 5.348	< 5.325	< 7.975	< 4.385
BE7	pCi/l	248	< 37.71	< 30.07	< 22.90	< 37.63	< 30.90	< 34.15	< 33.07	< 51.96	< 39.48	< 40.39	< 33.95	< 29.88	< 31.95
BETA	pCi/l	248	1.370	0.668	< -0.100	< 0.120	0.818	0.878	0.723	< 0.290	< 0.250	< -0.0110	< 0.0750	0.864	1.91
CO58	pCi/l	248	< 4.536	< 4.010	< 2.904	< 5.261	< 3.801	< 4.023	< 3.775	< 4.158	< 4.042	< 4.463	< 3.945	< 4.806	< 4.390
CO60	pCi/l	248	< 3.968	< 4.210	< 3.804	< 4.240	< 3.625	< 4.677	< 3.553	< 7.640	< 3.011	< 5.418	< 4.985	< 6.633	< 5.522
CS134	pCi/l	248	< 4.059	< 3.910	< 3.526	< 4.784	< 3.760	< 4.078	< 3.741	< 4.066	< 3.570	< 4.401	< 3.808	< 5.013	< 3.222
CS137	pCi/l	248	< 3.916	< 3.864	< 3.535	< 4.362	< 3.603	< 4.422	< 3.576	< 6.163	< 5.164	< 4.957	< 4.513	< 4.723	< 3.299
FE59	pCi/l	248	< 8.568	< 7.963	< 6.480	< 7.609	< 8.151	< 7.866	< 7.734	< 8.541	< 7.851	< 7.791	< 7.601	< 10.23	< 8.172
H3	pCi/l	248	< 31.1	< 0.00	< 19.7	< -20.1	< 22.4	< 54.8	< 53.9	< -252	< -206	< -175	< -183	< -94.3	< -106
II31	pCi/l	248	< 5.021	< 4.207	< 3.402	< 4.756	< 4.149	< 4.267	< 4.370	< 6.571	< 5.147	< 4.033	< 4.607	< 4.610	< 3.928
K40	pCi/l	248	92.2	94.82	48.52	92.34	152.4	119.5	58.59	114.7	72.9	139.1	191.8	73.46	72.64
MN54	pCi/l	248	< 4.019	< 3.754	< 3.480	< 4.176	< 3.688	< 4.178	< 3.315	< 5.197	< 4.071	4.872	< 3.853	< 4.533	< 2.613
NB95	pCi/l	248	< 4.681	< 4.414	< 4.026	< 4.862	< 4.942	< 4.242	< 3.343	< 6.731	< 3.866	< 5.647	< 5.139	< 5.154	< 3.488
ZN65	pCi/l	248	< 9.261	< 8.235	< 7.539	< 9.172	< 8.731	< 9.236	< 9.081	< 8.594	< 9.833	< 9.849	< 9.867	< 9.228	< 9.698
ZR95	pCi/l	248	< 7.003	< 6.439	< 5.996	< 6.555	< 6.525	< 6.840	< 6.429	< 9.443	< 7.759	< 7.196	< 8.260	< 7.709	< 6.063

NS - Insufficient Volume to Collect Sample

Analytical results provided by Duke Energy and are found in
Duke Energy Lab Report Job:09-JUN-0014

Sampling performed by Duke.



- Legend**
- MW-1 Groundwater Monitoring Well
 - SW-1 Surface Water Sample Location
 - Landfill Review Boundary
 - Landfill Compliance Boundary

NOTE:
 1. PROPERTY LINES, TOPOGRAPHY, AND OTHER PLANIMETRIC DATA OBTAINED FROM MECKLENBURG COUNTY GIS AND ARE APPROXIMATE.
 2. LOCATIONS FOR MONITORING WELLS AND SURFACE WATER LOCATIONS WERE PROVIDED BY DUKE ENERGY.

SCALE: AS SHOWN
 CHECKED BY: L. Armstrong
 DRAWN BY: W. Miller
 DATE: October 19, 2009



44 Buck Shoals Road
 Suite C-3
 Arden, NC
 PH. (828) 687-9080
 FAX. (828) 687-8003

GROUNDWATER SURFACE CONTOURS
 AUGUST 2009
 MCGUIRE LANDFILL #1 - Permit #60-04
 DUKE ENERGY MCGUIRE NUCLEAR STATION

JOB NO: 1411-09-047

FIGURE NO:
 1



For Detailed Instructions, see:
<http://dewwww/essenv/coc/>

Duke Energy Analytical Lab Services
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-5038

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Analytical Laboratory Use Only

LIMS # **09-JUL-0049** Sample Class **GWATER** Samples Originating From **NC SC**

Logged By **EBC** Date & Time **7/1/09 14:57** SAMPLE PROGRAM
Groundwater
NPDES
Drinking Water
UST

VENDOR **PACE** Cooler Temp (C) **4.5**

PO # **ISW01.341** Preserv.: 1=HCL, 2=H₂SO₄, 3=HNO₃, 4=Ice, 5=None

Page 1 of 1
DISTRIBUTION
ORIGINAL to LAB,
COPY to CLIENT

924 899n

Customer must Complete

1) Project Name **MNS LANDFILL 1** 2) Phone No: **875-5257**

3) Client **C. Campbell / T. Hunsucker** 4) Fax No: **875-4349**

5) Business Unit: **20036** 6) Process: **BLDFLGN** 7) Resp. To: **MC00**

8) Project ID: 9) Activity ID: 10) Mail Code: **MGO3A3**

11 Lab ID	12 Chem Desktop No.	13 Sample Description or ID	14 Collection Information			15 Comp.	16 Grab	VOC - 8260B (V)	ALK, SO4, Cl (V)	Hg (V)	METAL - (Ag, As, Ba, Ca, Cd, Cr, K, Mg, Na, Pb, Se) (V)	Chlorine (ppm)	20 Total # of Containers
			Date	Time	Signature								
29017640		TRIP BLANK	001	7/20/09	0445	LD LLL	X	3				n/a	3
29017641		MW-1	002	7/20/09	1320	LD LLL	X	3	1	1			6
29017642		MW-1D	003	7/20/09	1340	LD LLL	X	3	1	1			6
29017643		MW-2A	004	7/20/09	1250	Ron W	X	3	1	1			6
29017644		MW-2D	005	7/20/09	1315	Ron W	X	3	1	1			6
29017645		MW-3	006	7/20/09	1000	Ron W	X	3	1	1			6
29017646		MW-3D	007	7/20/09	0945	Ron W	X	3	1	1			6
29017647		MW-4	008	7/20/09	0745	Ron W	X	3	1	1			6
29017648		MW-4D	009	7/20/09	0800	Ron W	X	2	1	1			6
29017649		MW-11	010	7/20/09	0725	LD LLL	X	3	1	1			6
29017650		MW-11D	011	7/20/09	0850	LD LLL	X	3	1	1			6
29017651		MW-12	012	7/20/09	0935	LD LLL	X	3	1	1			6
29017652		MW-12D	013	7/20/09	1025	LD LLL	X	3	1	1			6
29017653		SW-1	014	7/20/09	1200	LD LLL	X	3	1	1			6
29017654		FIELD BLANK	015	7/20/09	1345	Ron W	X	3	1	1		n/a	6

LAB USE ONLY

11 Lab ID

29017640

29017641

29017642

29017643

29017644

29017645

29017646

29017647

29017648

29017649

29017650

29017651

29017652

29017653

29017654

Customer to complete appropriate columns to right

12 Chem Desktop No.

13 Sample Description or ID

14 Collection Information

Date

Time

Signature

Customer to sign & date below

21) Relinquished By **[Signature]** Date/Time **7/20/09 14:30**

Relinquished By **EBC Calder** Date/Time **7-20-09 14:30**

Relinquished By **[Signature]** Date/Time **7-21-09 10:05**

Relinquished By **[Signature]** Date/Time **7-21-09 10:05**

23) Sealed/Locked By **[Signature]** Date/Time **7-21-09 11:12**

Sealed/Lock Opened By **[Signature]** Date/Time **7-21-09 11:12**

24) Comments

Customer, important please indicate desired turnaround

22 Requested Turnaround **8-3**

48 Hr _____

*Other _____

* Add. Cost Will Apply

Please put the results into the correct EDD format as 'dictated' by the State of North Carolina. DHEC



For Detailed Instructions, see:
http://dewww.essenvi/coo/

Duke Energy Analytical Lab Services
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-5038

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Customer must Complete

1) Project Name MNS LANDFILL 1	2) Phone No: 875-5257
3) Client C. Campbell / T. Hunsucker	4) Fax No: 875-4349
5) Business Unit: 20036	6) Process: BLDFLGN
7) Resp. To: MC00	8) Project ID:
9) Activity ID:	10) Mail Code: MGO3A3

LAB USE ONLY
¹¹ Lab ID
29003169
29003170
29003171
29003172
29003173
29003174
29003175
29003176
29003177
29003178
29003179
29003180
29003181

Customer to complete appropriate columns to right

¹² Chem Desktop No.	¹³ Sample Description or ID
	MW-1
	MW-1D
	MW-2A
	MW-2D
	MW-3
	MW-3D
	MW-4
	MW-4D
	MW-11
	MW-11D
	MW-12
	MW-12D
	SW-1

Customer to sign & date below

21) Relinquished By <i>[Signature]</i>	Date/Time 7/20/09 1425	Accepted By <i>[Signature]</i>	Date/Time 7/20/09 1425
Relinquished By	Date/Time	Accepted By	Date/Time
23) Seal/Locked By	Date/Time	Seal/Lock Opened By	Date/Time
24) Comments			

09-JUN-0014		Analytical Laboratory Use Only	
Logged By	Date & Time	Sample Class	Samples Originating From
			SC
VENDOR		SAMPLE PROGRAM	
		Groundwater	
		NPDES	
		Drinking Water	
		UST	
PO #	MR #	Cooler Temp (C)	15 Preserv.: 1=HCL, 2=H2SO4, 3=HNO3, 4=Ice, 5=None
Customer to complete all appropriate NON-SHADED areas.		16 Analyses Required	17 Comp. 18 Grab
		Gamma	3
		Gross A & B	3
		Tritium	5

¹⁴ Collection Information			Date	Time	Signature	17 Comp.	18 Grab	Gamma	Gross A & B	Tritium	Total # of Containers
Date	Time	Signature									
7/20/09	1320	TD	7/20/09	1310	TD	X	X	1	1	1	3
7/20/09	1250	TD	7/20/09	1315	TD	X	X	1	1	1	3
7/20/09	1000	TD	7/20/09	0945	TD	X	X	1	1	1	3
7/20/09	0800	TD	7/20/09	0800	TD	X	X	1	1	1	3
7/20/09	0725	TD	7/20/09	0850	TD	X	X	1	1	1	3
7/20/09	0935	TD	7/20/09	1025	TD	X	X	1	1	1	3
7/20/09	1025	TD	7/20/09	1200	TD	X	X	1	1	1	3

Customer, important please indicate desired turnaround

22) Requested Turnaround
14 Days
7 Days
48 Hr
Other
* Add. Cost Will Apply

19) Page 1 of 1
DISTRIBUTION
ORIGINAL to LAB
COPY to CLIENT



Radiological Data for Job: 09-JUN-0014

Report Generated: 8/12/2009 06:26:22

STATION: MCGUIRE
LOCATION: MW-1
TYPE: LANDFILL

Sample #: 29003169

07/20/09 13:20:00 to 07/20/09 13:20:00

MNS LANDFILL 1 | MW-1

ALPHAH20_P GROSS ALPHA WATER ANALYSIS (PICOCURIES)

Activity - Error
ALPHA < -3.60E-01 pCi/l

BETAH20 GROSS BETA WATER ANALYSIS

Activity - Error
BETA 1.370E+00 3.980E-01 pCi/l

GAMMAGW GAMMA GROUND WATER ANALYSIS

	<u>Activity - Error</u>		
MN54	< 4.019E+00	0.000E+00	pCi/l
CO58	< 4.536E+00	0.000E+00	pCi/l
FE59	< 8.568E+00	0.000E+00	pCi/l
CO60	< 3.968E+00	0.000E+00	pCi/l
ZN65	< 9.261E+00	0.000E+00	pCi/l
NB95	< 4.681E+00	0.000E+00	pCi/l
ZR95	< 7.003E+00	0.000E+00	pCi/l
I131	< 5.021E+00	0.000E+00	pCi/l
CS134	< 4.059E+00	0.000E+00	pCi/l
CS137	< 3.916E+00	0.000E+00	pCi/l
BALA140	< 5.569E+00	0.000E+00	pCi/l
BE7	< 3.771E+01	0.000E+00	pCi/l
K40	9.220E+01	2.688E+01	pCi/l

H3GW TRITIUM ANALYSIS OF GROUND WATER

Activity - Error
H3 < 3.11E+01 pCi/l

STATION: MCGUIRE
LOCATION: MW-1D
TYPE: LANDFILL

Sample #: 29003170

07/20/09 13:40:00 to 07/20/09 13:40:00

MNS LANDFILL 1 | MW-1D

ALPHAH20_P GROSS ALPHA WATER ANALYSIS (PICOCURIES)

Activity - Error
ALPHA < -3.00E-01 pCi/l

BETAH20 GROSS BETA WATER ANALYSIS

Activity - Error
BETA 6.680E-01 3.800E-01 pCi/l



Radiological Data for Job: 09-JUN-0014

Report Generated: 8/12/2009 06:26:22

STATION: MCGUIRE
LOCATION: MW-1D
TYPE: LANDFILL

Sample #: 29003170

07/20/09 13:40:00 to 07/20/09 13:40:00

MNS LANDFILL 1 | MW-1D

GAMMAGW GAMMA GROUND WATER ANALYSIS

	<u>Activity - Error</u>		
MN54	< 3.754E+00	0.000E+00	pCi/l
CO58	< 4.010E+00	0.000E+00	pCi/l
FE59	< 7.963E+00	0.000E+00	pCi/l
CO60	< 4.210E+00	0.000E+00	pCi/l
ZN65	< 8.235E+00	0.000E+00	pCi/l
NB95	< 4.414E+00	0.000E+00	pCi/l
ZR95	< 6.439E+00	0.000E+00	pCi/l
I131	< 4.207E+00	0.000E+00	pCi/l
CS134	< 3.910E+00	0.000E+00	pCi/l
CS137	< 3.864E+00	0.000E+00	pCi/l
BALA140	< 4.669E+00	0.000E+00	pCi/l
BE7	< 3.007E+01	0.000E+00	pCi/l
K40	9.482E+01	2.169E+01	pCi/l

H3GW TRITIUM ANALYSIS OF GROUND WATER

	<u>Activity - Error</u>		
H3	< 0.00E+00		pCi/l

STATION: MCGUIRE
LOCATION: MW-2A
TYPE: LANDFILL

Sample #: 29003171

07/20/09 12:50:00 to 07/20/09 12:50:00

MNS LANDFILL 1 | MW-2A

ALPHAH20_P GROSS ALPHA WATER ANALYSIS (PICOCURIES)

	<u>Activity - Error</u>		
ALPHA	< -9.60E-02		pCi/l

BETAH20 GROSS BETA WATER ANALYSIS

	<u>Activity - Error</u>		
BETA	< -1.00E-01		pCi/l

GAMMAGW GAMMA GROUND WATER ANALYSIS

	<u>Activity - Error</u>		
MN54	< 3.480E+00	0.000E+00	pCi/l
CO58	< 2.904E+00	0.000E+00	pCi/l
FE59	< 6.480E+00	0.000E+00	pCi/l
CO60	< 3.804E+00	0.000E+00	pCi/l
ZN65	< 7.539E+00	0.000E+00	pCi/l
NB95	< 4.026E+00	0.000E+00	pCi/l



Radiological Data for Job: 09-JUN-0014

Report Generated: 8/12/2009 06:26:22

STATION: MCGUIRE
LOCATION: MW-2A
TYPE: LANDFILL

Sample #: 29003171

07/20/09 12:50:00 to 07/20/09 12:50:00

MNS LANDFILL 1 | MW-2A

GAMMAGW GAMMA GROUND WATER ANALYSIS

	<u>Activity - Error</u>		
ZR95	< 5.996E+00	0.000E+00	pCi/l
I131	< 3.402E+00	0.000E+00	pCi/l
CS134	< 3.526E+00	0.000E+00	pCi/l
CS137	< 3.535E+00	0.000E+00	pCi/l
BALA140	< 4.022E+00	0.000E+00	pCi/l
BE7	< 2.290E+01	0.000E+00	pCi/l
K40	4.852E+01	2.148E+01	pCi/l

H3GW TRITIUM ANALYSIS OF GROUND WATER

	<u>Activity - Error</u>		
H3	< 1.97E+01		pCi/l

STATION: MCGUIRE
LOCATION: MW-2D
TYPE: LANDFILL

Sample #: 29003172

07/20/09 13:15:00 to 07/20/09 13:15:00

MNS LANDFILL 1 | MW-2D

ALPHAH20_P GROSS ALPHA WATER ANALYSIS (PICOCURIES)

	<u>Activity - Error</u>		
ALPHA	< -3.90E-01		pCi/l

BETAH20 GROSS BETA WATER ANALYSIS

	<u>Activity - Error</u>		
BETA	< 1.20E-01		pCi/l

GAMMAGW GAMMA GROUND WATER ANALYSIS

	<u>Activity - Error</u>		
MN54	< 4.176E+00	0.000E+00	pCi/l
CO58	< 5.261E+00	0.000E+00	pCi/l
FE59	< 7.609E+00	0.000E+00	pCi/l
CO60	< 4.240E+00	0.000E+00	pCi/l
ZN65	< 9.172E+00	0.000E+00	pCi/l
NB95	< 4.862E+00	0.000E+00	pCi/l
ZR95	< 6.555E+00	0.000E+00	pCi/l
I131	< 4.756E+00	0.000E+00	pCi/l
CS134	< 4.784E+00	0.000E+00	pCi/l
CS137	< 4.362E+00	0.000E+00	pCi/l
BALA140	< 3.399E+00	0.000E+00	pCi/l
BE7	< 3.763E+01	0.000E+00	pCi/l



Radiological Data for Job: 09-JUN-0014

Report Generated: 8/12/2009 06:26:22

STATION: MCGUIRE
LOCATION: MW-2D
TYPE: LANDFILL

Sample #: 29003172

07/20/09 13:15:00 to 07/20/09 13:15:00

MNS LANDFILL 1 | MW-2D

GAMMAGW GAMMA GROUND WATER ANALYSIS

Activity - Error

K40 9.234E+01 3.136E+01 pCi/l

H3GW TRITIUM ANALYSIS OF GROUND WATER

Activity - Error

H3 < -2.01E+01 pCi/l

STATION: MCGUIRE
LOCATION: MW-3
TYPE: LANDFILL

Sample #: 29003173

07/20/09 10:00:00 to 07/20/09 10:00:00

MNS LANDFILL 1 | MW-3

ALPHAH20_P GROSS ALPHA WATER ANALYSIS (PICOCURIES)

Activity - Error

ALPHA < -3.80E-01 pCi/l

BETAH20 GROSS BETA WATER ANALYSIS

Activity - Error

BETA 8.180E-01 3.900E-01 pCi/l

GAMMAGW GAMMA GROUND WATER ANALYSIS

Activity - Error

MN54	< 3.688E+00	0.000E+00	pCi/l
CO58	< 3.801E+00	0.000E+00	pCi/l
FE59	< 8.151E+00	0.000E+00	pCi/l
CO60	< 3.625E+00	0.000E+00	pCi/l
ZN65	< 8.731E+00	0.000E+00	pCi/l
NB95	< 4.942E+00	0.000E+00	pCi/l
ZR95	< 6.525E+00	0.000E+00	pCi/l
I131	< 4.149E+00	0.000E+00	pCi/l
CS134	< 3.760E+00	0.000E+00	pCi/l
CS137	< 3.603E+00	0.000E+00	pCi/l
BALA140	< 4.863E+00	0.000E+00	pCi/l
BE7	< 3.090E+01	0.000E+00	pCi/l
K40	1.524E+02	2.986E+01	pCi/l

H3GW TRITIUM ANALYSIS OF GROUND WATER

Activity - Error

H3 < 2.24E+01 pCi/l



Radiological Data for Job: 09-JUN-0014

Report Generated: 8/12/2009 06:26:22

STATION: MCGUIRE
LOCATION: MW-3D
TYPE: LANDFILL

Sample #: 29003174

07/20/09 09:45:00 to 07/20/09 09:45:00

MNS LANDFILL 1 | MW-3D

ALPHAH20_P GROSS ALPHA WATER ANALYSIS (PICOCURIES)

Activity - Error
ALPHA < -4.80E-03 pCi/l

BETAH20 GROSS BETA WATER ANALYSIS

Activity - Error
BETA 8.780E-01 3.870E-01 pCi/l

GAMMAGW GAMMA GROUND WATER ANALYSIS

	<u>Activity - Error</u>		
MN54	< 4.178E+00	0.000E+00	pCi/l
CO58	< 4.023E+00	0.000E+00	pCi/l
FE59	< 7.866E+00	0.000E+00	pCi/l
CO60	< 4.677E+00	0.000E+00	pCi/l
ZN65	< 9.236E+00	0.000E+00	pCi/l
NB95	< 4.242E+00	0.000E+00	pCi/l
ZR95	< 6.840E+00	0.000E+00	pCi/l
I131	< 4.267E+00	0.000E+00	pCi/l
CS134	< 4.078E+00	0.000E+00	pCi/l
CS137	< 4.422E+00	0.000E+00	pCi/l
BALA140	< 4.509E+00	0.000E+00	pCi/l
BE7	< 3.415E+01	0.000E+00	pCi/l
K40	1.195E+02	2.810E+01	pCi/l

H3GW TRITIUM ANALYSIS OF GROUND WATER

Activity - Error
H3 < 5.48E+01 pCi/l

STATION: MCGUIRE
LOCATION: MW-4
TYPE: LANDFILL

Sample #: 29003175

07/20/09 07:45:00 to 07/20/09 07:45:00

MNS LANDFILL 1 | MW-4

ALPHAH20_P GROSS ALPHA WATER ANALYSIS (PICOCURIES)

Activity - Error
ALPHA < 1.10E-01 pCi/l

BETAH20 GROSS BETA WATER ANALYSIS

Activity - Error
BETA 7.230E-01 3.970E-01 pCi/l



Radiological Data for Job: 09-JUN-0014

Report Generated: 8/12/2009 06:26:22

STATION: MCGUIRE
LOCATION: MW-4
TYPE: LANDFILL

Sample #: 29003175

07/20/09 07:45:00 to 07/20/09 07:45:00

MNS LANDFILL 1 | MW-4

GAMMAGW GAMMA GROUND WATER ANALYSIS

	<u>Activity - Error</u>			
MN54	< 3.315E+00	0.000E+00		pCi/l
CO58	< 3.775E+00	0.000E+00		pCi/l
FE59	< 7.734E+00	0.000E+00		pCi/l
CO60	< 3.553E+00	0.000E+00		pCi/l
ZN65	< 9.081E+00	0.000E+00		pCi/l
NB95	< 3.343E+00	0.000E+00		pCi/l
ZR95	< 6.429E+00	0.000E+00		pCi/l
I131	< 4.370E+00	0.000E+00		pCi/l
CS134	< 3.741E+00	0.000E+00		pCi/l
CS137	< 3.576E+00	0.000E+00		pCi/l
BALA140	< 4.720E+00	0.000E+00		pCi/l
BE7	< 3.307E+01	0.000E+00		pCi/l
K40	5.859E+01	2.324E+01		pCi/l

H3GW TRITIUM ANALYSIS OF GROUND WATER

	<u>Activity - Error</u>			
H3	< 5.39E+01			pCi/l

STATION: MCGUIRE
LOCATION: MW-4D
TYPE: LANDFILL

Sample #: 29003176

07/20/09 08:00:00 to 07/20/09 08:00:00

MNS LANDFILL UP | MW-4D

ALPHAH20_P GROSS ALPHA WATER ANALYSIS (PICOCURIES)

	<u>Activity - Error</u>			
ALPHA	< -4.30E-01			pCi/l

BETAH20 GROSS BETA WATER ANALYSIS

	<u>Activity - Error</u>			
BETA	< 2.90E-01			pCi/l

GAMMAGW GAMMA GROUND WATER ANALYSIS

	<u>Activity - Error</u>			
MN54	< 5.197E+00	0.000E+00		pCi/l
CO58	< 4.158E+00	0.000E+00		pCi/l
FE59	< 8.541E+00	0.000E+00		pCi/l
CO60	< 7.640E+00	0.000E+00		pCi/l
ZN65	< 8.594E+00	0.000E+00		pCi/l
NB95	< 6.731E+00	0.000E+00		pCi/l



Radiological Data for Job: 09-JUN-0014

Report Generated: 8/12/2009 06:26:22

STATION: MCGUIRE
LOCATION: MW-4D
TYPE: LANDFILL

Sample #: 29003176

07/20/09 08:00:00 to 07/20/09 08:00:00

MNS LANDFILL UP | MW-4D

GAMMAGW GAMMA GROUND WATER ANALYSIS

	<u>Activity - Error</u>		
ZR95	< 9.443E+00	0.000E+00	pCi/l
I131	< 6.571E+00	0.000E+00	pCi/l
CS134	< 4.066E+00	0.000E+00	pCi/l
CS137	< 6.163E+00	0.000E+00	pCi/l
BALA140	< 6.490E+00	0.000E+00	pCi/l
BE7	< 5.196E+01	0.000E+00	pCi/l
K40	1.147E+02	2.504E+01	pCi/l

H3GW TRITIUM ANALYSIS OF GROUND WATER

	<u>Activity - Error</u>		
H3	< -2.52E+02		pCi/l

STATION: MCGUIRE
LOCATION: MW-11
TYPE: LANDFILL

Sample #: 29003177

07/20/09 07:25:00 to 07/20/09 07:25:00

MNS LANDFILL 1 | MW-11

ALPHAH20_P GROSS ALPHA WATER ANALYSIS (PICOCURIES)

	<u>Activity - Error</u>		
ALPHA	< 3.90E-02		pCi/l

BETAH20 GROSS BETA WATER ANALYSIS

	<u>Activity - Error</u>		
BETA	< 2.50E-01		pCi/l

GAMMAGW GAMMA GROUND WATER ANALYSIS

	<u>Activity - Error</u>		
MN54	< 4.071E+00	0.000E+00	pCi/l
CO58	< 4.042E+00	0.000E+00	pCi/l
FE59	< 7.851E+00	0.000E+00	pCi/l
CO60	< 3.011E+00	0.000E+00	pCi/l
ZN65	< 9.833E+00	0.000E+00	pCi/l
NB95	< 3.866E+00	0.000E+00	pCi/l
ZR95	< 7.759E+00	0.000E+00	pCi/l
I131	< 5.147E+00	0.000E+00	pCi/l
CS134	< 3.570E+00	0.000E+00	pCi/l
CS137	< 5.164E+00	0.000E+00	pCi/l
BALA140	< 5.330E+00	0.000E+00	pCi/l
BE7	< 3.948E+01	0.000E+00	pCi/l



Radiological Data for Job: 09-JUN-0014

Report Generated: 8/12/2009 06:26:22

STATION: MCGUIRE
LOCATION: MW-11
TYPE: LANDFILL

Sample #: 29003177

07/20/09 07:25:00 to 07/20/09 07:25:00

MNS LANDFILL 1 | MW-11

GAMMAGW GAMMA GROUND WATER ANALYSIS

Activity - Error

K40 7.290E+01 2.153E+01 pCi/l

H3GW TRITIUM ANALYSIS OF GROUND WATER

Activity - Error

H3 < -2.06E+02 pCi/l

STATION: MCGUIRE
LOCATION: MW-11D
TYPE: LANDFILL

Sample #: 29003178

07/20/09 08:50:00 to 07/20/09 08:50:00

MNS LANDFILL 1 | MW-11D

ALPHAH20_P GROSS ALPHA WATER ANALYSIS (PICOCURIES)

Activity - Error

ALPHA < -4.60E-01 pCi/l

BETAH20 GROSS BETA WATER ANALYSIS

Activity - Error

BETA < -1.10E-02 pCi/l

GAMMAGW GAMMA GROUND WATER ANALYSIS

Activity - Error

MN54	< 4.872E+00	0.000E+00	pCi/l
CO58	< 4.463E+00	0.000E+00	pCi/l
FE59	< 7.791E+00	0.000E+00	pCi/l
CO60	< 5.418E+00	0.000E+00	pCi/l
ZN65	< 9.849E+00	0.000E+00	pCi/l
NB95	< 5.647E+00	0.000E+00	pCi/l
ZR95	< 7.196E+00	0.000E+00	pCi/l
I131	< 4.033E+00	0.000E+00	pCi/l
CS134	< 4.401E+00	0.000E+00	pCi/l
CS137	< 4.957E+00	0.000E+00	pCi/l
BALA140	< 5.348E+00	0.000E+00	pCi/l
BE7	< 4.039E+01	0.000E+00	pCi/l
K40	1.391E+02	2.681E+01	pCi/l

H3GW TRITIUM ANALYSIS OF GROUND WATER

Activity - Error

H3 < -1.75E+02 pCi/l



Radiological Data for Job: 09-JUN-0014

Report Generated: 8/12/2009 06:26:22

STATION: MCGUIRE
LOCATION: MW-12
TYPE: LANDFILL

Sample #: 29003179

07/20/09 09:35:00 to 07/20/09 09:35:00

MNS LANDFILL 1 | MW-12

ALPHAH20_P GROSS ALPHA WATER ANALYSIS (PICOCURIES)

Activity - Error

ALPHA < 2.50E-01 pCi/l

BETAH20 GROSS BETA WATER ANALYSIS

Activity - Error

BETA < 7.50E-02 pCi/l

GAMMAGW GAMMA GROUND WATER ANALYSIS

Activity - Error

MN54	< 3.853E+00	0.000E+00	pCi/l
CO58	< 3.945E+00	0.000E+00	pCi/l
FE59	< 7.601E+00	0.000E+00	pCi/l
CO60	< 4.985E+00	0.000E+00	pCi/l
ZN65	< 9.867E+00	0.000E+00	pCi/l
NB95	< 5.139E+00	0.000E+00	pCi/l
ZR95	< 8.260E+00	0.000E+00	pCi/l
I131	< 4.607E+00	0.000E+00	pCi/l
CS134	< 3.808E+00	0.000E+00	pCi/l
CS137	< 4.513E+00	0.000E+00	pCi/l
BALA140	< 5.325E+00	0.000E+00	pCi/l
BE7	< 3.395E+01	0.000E+00	pCi/l
K40	1.918E+02	3.500E+01	pCi/l

H3GW TRITIUM ANALYSIS OF GROUND WATER

Activity - Error

H3 < -1.83E+02 pCi/l

STATION: MCGUIRE
LOCATION: MW-12D
TYPE: LANDFILL

Sample #: 29003180

07/20/09 10:25:00 to 07/20/09 10:25:00

MNS LANDFILL 1 | MW-12D

ALPHAH20_P GROSS ALPHA WATER ANALYSIS (PICOCURIES)

Activity - Error

ALPHA < -1.60E-01 pCi/l

BETAH20 GROSS BETA WATER ANALYSIS

Activity - Error

BETA 8.640E-01 3.890E-01 pCi/l



Radiological Data for Job: 09-JUN-0014

Report Generated: 8/12/2009 06:26:22

STATION: MCGUIRE
LOCATION: MW-12D
TYPE: LANDFILL

Sample #: 29003180

07/20/09 10:25:00 to 07/20/09 10:25:00

MNS LANDFILL 1 | MW-12D

GAMMAGW GAMMA GROUND WATER ANALYSIS

	<u>Activity - Error</u>		
MN54	< 4.533E+00	0.000E+00	pCi/l
CO58	< 4.806E+00	0.000E+00	pCi/l
FE59	< 1.023E+01	0.000E+00	pCi/l
CO60	< 6.633E+00	0.000E+00	pCi/l
ZN65	< 9.228E+00	0.000E+00	pCi/l
NB95	< 5.154E+00	0.000E+00	pCi/l
ZR95	< 7.709E+00	0.000E+00	pCi/l
I131	< 4.610E+00	0.000E+00	pCi/l
CS134	< 5.013E+00	0.000E+00	pCi/l
CS137	< 4.723E+00	0.000E+00	pCi/l
BALA140	< 7.975E+00	0.000E+00	pCi/l
BE7	< 2.988E+01	0.000E+00	pCi/l
K40	7.346E+01	2.123E+01	pCi/l

H3GW TRITIUM ANALYSIS OF GROUND WATER

	<u>Activity - Error</u>		
H3	< -9.43E+01		pCi/l

STATION: MCGUIRE
LOCATION: SW-1
TYPE: LANDFILL

Sample #: 29003181

07/20/09 12:00:00 to 07/20/09 12:00:00

MNS LANDFILL 1 | SW-1

ALPHAH20_P GROSS ALPHA WATER ANALYSIS (PICOCURIES)

	<u>Activity - Error</u>		
ALPHA	< 1.80E-01		pCi/l

BETAH20 GROSS BETA WATER ANALYSIS

	<u>Activity - Error</u>		
BETA	1.910E+00	4.440E-01	pCi/l

GAMMAGW GAMMA GROUND WATER ANALYSIS

	<u>Activity - Error</u>		
MN54	< 2.613E+00	0.000E+00	pCi/l
CO58	< 4.390E+00	0.000E+00	pCi/l
FE59	< 8.172E+00	0.000E+00	pCi/l
CO60	< 5.522E+00	0.000E+00	pCi/l
ZN65	< 9.698E+00	0.000E+00	pCi/l
NB95	< 3.488E+00	0.000E+00	pCi/l



Radiological Data for Job: 09-JUN-0014

Report Generated: 8/12/2009 06:26:22

STATION: MCGUIRE
LOCATION: SW-1
TYPE: LANDFILL

Sample #: 29003181

07/20/09 12:00:00 to 07/20/09 12:00:00

MNS LANDFILL 1 | SW-1

GAMMAGW GAMMA GROUND WATER ANALYSIS

	<u>Activity - Error</u>		
ZR95	< 6.063E+00	0.000E+00	pCi/l
I131	< 3.928E+00	0.000E+00	pCi/l
CS134	< 3.222E+00	0.000E+00	pCi/l
CS137	< 3.299E+00	0.000E+00	pCi/l
BALA140	< 4.385E+00	0.000E+00	pCi/l
BE7	< 3.195E+01	0.000E+00	pCi/l
K40	7.264E+01	1.916E+01	pCi/l

H3GW TRITIUM ANALYSIS OF GROUND WATER

	<u>Activity - Error</u>		
H3	< -1.06E+02		pCi/l